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IV. English.	Pima.	San Diego.	San Juan Capistrano.
Father	Niook	Mānallē	Nenelh
Mother	Intui	Patālle	Neyoh
Brave	Tiuot	Kunemei	Shehuūshuit
Strong	..	..	..
Bad	Mūmkō	Xanō	..
Good	Skukit	Xan	..
Great	Vōhōvākuitch	Quatai	Ahūūloot
Small	..	Illmōm	Elūhmal
Much	..	..	..
Little	..	..	..
Head	Nemōh	Xellta	Tchumuyuh
Heart	Ipōtük	Yatchick	Noshun
Hand	Noh	Ēshall	Poma
Ear	Nāānk	Xiamall	Panakwn
Friend	..	Kunehuaia	Nē-hueh-lo
Enemy	..	Axua	Nāāquañi

[No attempt has been made to reduce these vocabularies to the system of orthography usually followed in this work, as it could not have been done correctly without oral communication. Dr. Scouler writes rapidly, and many of his letters are very doubtful; but Dr. Coulter's, though clearly written, is more embarrassing, as he evidently follows an unexplained system of his own: had he adhered to the Spanish orthography, his words might have been easily expressed according to that here adopted. His *x* is our *kh*.—ED.]

XVIII.—Notes on the Geography of the Columbia River. By the late Dr. GAIRDNER, M.D. Communicated by his Mother, Mrs. GAIRDNER, of Edinburgh.

[The author, whose scientific zeal and ability are so honourably evidenced by these notes made under the pressure of professional engagements and declining health, was stationed for eleven months at Fort Vancouver on the Columbia River, and subsequently passed eight months in the Sandwich Isles.—ED.]

Vancouver, January, 1835.—We have been lately informed that a large river, called by the natives Skeena, discharges itself into the sea at Port Essington (in 54° 25' N.), on the N.W. coast. Now, from a letter just received from Mr. S. M'Gillivray (chief trader), this is probably the outlet of Simpson's River, in N. Cale-

San Gabriel.	Santa Barbara.	San Luis Obisp.	San Antonio.
Amak	Kokonosh	Sapi	Tele
Aükö	Xoninash	Tuyu	Epjo
Ítako	Axauishash	..	Xaialhua
Huuka	..	..	Kmopax
Chaité	..	Tsohuis	Xomo
..	..	Ts'yunon	Kítsep
Yo-oite	..	..	Katcha
Tsinuch	..	..	Skitano
Aye-oin	..	Tsexu	Xaiya
Āpuan	..	Tsuhuisnин	Shomo
Ashūn	..	P'sho	Traako
Aman	..	Noxop	Aahuu
Ananax	..	Nupu	Menan
Niye-hiya	..	P'ta	Tishokolo
Nikait	..	Tsaxsi	Tienxa
		Tsinayihlmu	Trinaihl

donia; for he mentions that a feast, lately held by the carriers on the latter river, was attended by an Indian chief from the neighbourhood of Fort Simpson, who said that he came from a place on the coast called Skeena. If such be the case, Simpson's River must tend to the southward for the space of 78 miles of latitude, with about 10 of longitude of westing.

We have been also informed by one of the clerks of a Rivière de Sel, about 60 miles above Henry's Forks, to the S., where are little fumeroles* in the ground, with deposits of sulphur, and incrustations of common salt in the prairie.

Walla-walla (in 46° N.), *June*.—We here got some details of the geography of Snake River. It is distant 4 stages for loaded horses (about 15 miles each); 64 miles from Henry's Forks to the American Falls. About 20 miles below which commence the great falls of Snake River, which continue for about 80 miles: about 15 miles below the end of them are the Salmon Falls and the mouth of Sickly River, on right bank. From Sickly River there are 13 stages, or 195 miles, following the course of the great river to Powder River; 64 miles from Powder River to Great Nizperé's Plains; 45 miles to Clear Water Forks. Salmon is found above Salmon Falls, which are low, like the Columbia

* Crevices whence smoke issues.—ED.

Chutes, but are not found above the Dalles (Slabs); so that it is supposed that the progress of the shoals is interrupted by some falls, for during the whole 80 miles of these Dalles the river is inaccessible from the precipices which form its channel.

The main breadth of Snake River, between Henry's Forks and American Falls, is about half the breadth of the Columbia at Walla-walla; that is, about 250 yards. Above Henry's Forks, the main or S. branch proceeds to the S. end of the Three Tétons (Paps), from which it turns off W. and S.W., and is still of a great size. There is a large boiling-spring near the Arrow-stone River, at the N. fork of Flat-head River; another in Big Hole, on the Missouri, about a day's march from the heads of Bitter-Root River; and a third, hotter than either of the other two, on Ben or White River.

We rode to the Snake River Forks, about 10 miles from the fort. Snake River, at its junction with the Columbia, is not half the breadth of the latter, being about 200 yards. There are villages of Pelouches* at the mouth of Snake River. The country, for the whole way to the forks, is the same sandy plain as round Fort Walla-walla. In descending Snake River, from Clear-Water Forks to Salmon River Forks, the distance is from 75 to 80 miles; from the latter to Powder River 30; from thence to Burnt River 30.

June 30th.—We started from the fort, at 11 A.M., for the Grande Ronde. We reached the banks of the Walla-walla River, just at foot of Blue Mountains, at 6 P.M., and encamped at the clump of poplars (*Taille des Liards*). Our general course was E.S.E. magnetic, or S.E. by E. true meridian, and our distance about 21 miles. The first half of the way consisted of undulating hills of sand, marl and gravel, after which an extensive plain of strong soil extends to the foot of the Blue Mountains. Eyakema Mountain bore from our camp N. 80° W. (magnetic).

July 1st.—We started at 8 A.M., and immediately commenced the ascent of the Blue Mountains, which was very gradual. At 2 P.M. reached the summit, which is a table-land covered with snow or consisting of swamps, from which the rivers rise. The profile of these mountains is tabular, as seen from a distance. Pine-woods cover only the very summit of the mountains, there being none on the side, except a few scattered trees in the tops of the ravines. The sides of these hills are covered with a short carpet of grass and a beautiful variety of flowers, the most conspicuous of which were sun-flowers and yellow lupins; near the summit, and lower down, a large pink liliaceous flower. Snow still remained in large patches in the woods. We encamped on

* Polonches? (see p. 256).—ED.

the edge of a swamp on the E. side of the summit, with patches of snow all round.

2nd.—We started at 7 A.M., and made a course about S.E. by E. (magnetic) till 2 P.M., when we encamped on a little stream in hills at the N.E. end of Grande Ronde.* I should estimate, by guess, the descent on this side of the Blue Mountains to be about half the ascent on the opposite side. We met with more snow lower down on this side than on the other. This end of Grande Ronde consists of undulating prairie, covered with fine green herbage and clumps of pines. On the descent we had a fine view of mountains bounding Grande Ronde on the S.E. side and S.W. end: the former are higher than the Blue Mountains, their ridge being quite covered with snow; but those at the S.W. end are the highest of all, rising into peaks, at the heads of Day's River and Powder River, covered with what I should think perpetual snow. The Indians here eat the inner bark of two species of pine, Nos. 1 and 2; the women peeling it off very dexterously by thrusting a long stick between the bark and the wood.

Grande Ronde has a general direction of N.N.E. and S.S.W. (magnetic), or N.E. by E. and S.W. by W. (true). The snowy mountains at the head of Day's River, and S.W. end of Grande Ronde, bore from the road across the mountains S. by E. (magnetic). The strata seen had a direction N. 50° W., and dip N.E. 25° on top of the Blue Mountains, in the midst of the snow.

3rd.—We started at 8 A.M., and at 9 reached N.E. end of the Grande Ronde, which is an extensive plain, surrounded by hills and covered with green herbage; through the middle of which runs, towards N.E., the Muddy River, which is joined by several feeders from bounding hills. At noon we reached the camp of the Rayouse and Walla-walla Indians, who had come hither to trade in horses with the Snake Indians. It consisted of twelve large mat-lodges, covered with boughs, each about 50 feet long. We pitched our camp alongside of the Indians. The plain had a very lovely appearance; more than a thousand horses were running about, and the Indians galloping to and fro.

We rode to see Indian women digging kamoss, about 5 miles S.W. of the camp, in a swamp at the foot of the hills. It is very laborious work; each woman, before midday, having dug up two large bags, of more than a bushel each (90 lbs.).

4th.—We remarked that the patches of snow on the hills on the N.W. side of the Grande Ronde were not more than 300 or 400 feet above the level of the plain. We rode nearly across the Grande Ronde, and found that it is by no means level, but in-

* Gd. Road (J. Arrowsmith's map, 1834).—ED.

clines to the S.E. On this account, the central river, which drains it, runs almost close to the foot of the S.E. bounding mountains, and receives almost all its feeders on the left bank. I was much pleased with this trip to the Grande Ronde, and only regret that want of health and instruments prevented its being made available for scientific purposes.

I noted down the essential characters and sex of the species of pines observed in the course of this journey :—

1. *Pinus conis* obovatis, squamis apice truncatis, spina brevi armatis, ad basin coni directis, linearibus, sessilibus. Fol. binis ternatisve, glaucis, triquetris, 4 pollic long.
2. *P. conis* brevi-cylindricis, squamis linearibus apice truncatis, spina debili longâ, ad basin coni directis, sessilibus. Fol. binis triquetris virid. 2 pollic. long. Arbor lichene nigro eduli capilloso-vestitus.
3. *P. conis* ovatis, squamis ovalibus, bractea linguata sub squamis; breviter pedunculatis. Fasciculo foliorum multifolioso; foliolis $\frac{1}{2}$ unc. long. virid. sulcatis. Arbor magn.
4. *Abies*.—*A. foliis* tetragonis, apice spinoso-secundis. *Conis*?
5. *A.*—*Canadensis* balsamea? Cortice breviter-vesiculato. Fol. apice rotundatis non secundis, planis. *Conis*?
6. *A. Foliis* secundis, latis, apice rotundatis, subtus glaucis. *Conis*?
7. *A. Douglassii*. *A. conis* bracteat. bract. 3 lingua.

After my departure from the Grande Ronde I learned that there is a thermal spring there: it forms a large basin, in the middle of which the gas bubbles up. It is so hot that the men who filled the bottle could not wade in to any distance from the edge.

Vancouver, August 3rd.—I had some conversation with N. Wyatts (fur-trader), who is at the fort, about some hot-springs which he had visited on a fork of the Falls River: they are about 30 miles from the Columbia. They are hot enough to cook meat—their temperature 191° Fahrenheit! They taste of sulphur and iron, and deposit a white incrustation on the rocks (calcareous?). Opposite to these springs, 24 miles down the stream, he discovered two fossil thigh-bones, resembling those of an elk, embedded in sandstone lying under basalt. There are large beds of pumice on the Falls River. The largest masses of obsidian he has yet seen in his travels are in the vicinity of Portneuf* River: some would weigh a ton, and are loose. He has seen none *in situ*. There are beds of bituminous coal, in considerable quantity, on the E. declivity of the Rocky Mountains, on Stinking River, a tributary of Wind River, which falls into Big-house River, a tributary of Yellow-stone River.

* Poit Neuf (J. Arrowsmith, 1834).

Notes on the Indian Tribes on the Upper and Lower Columbia.

List of the nations on the lower part of the Columbia, and along the sea-coast southwards, from Michel la Framboise :—

I. SAHO LATAK LANGUAGE.	1. <i>Katlagakya.</i>	From the Cascades to Vancouver, along the river.
	2. <i>Mamnit.</i>	In Multnomah Island, now extinct, on the side next the Columbia.
	3. <i>Katlaminimim.</i>	In Multnomah, all on the side next Wallamat, the lower branch being extinct.
	4. <i>Wakamass.</i>	From Deer's Isle to the lower branch of the Wallamat, at its mouth ; Kesho their chief.
	5. <i>Katlaportl.</i>	Along a river of the same name, to the mouth and right bank of the Columbia, for five miles above its mouth.
	6. <i>Klakalama.</i>	On the banks of a little river on the right bank of Columbia, between No. 5 and the Towalitch River.
	7. <i>Seamysty.</i>	At the mouth of the Towalitch River.
	8. <i>Ketlakaniks.</i>	At Oak Point, on the left bank of the Columbia. Formerly Nos. 7 and 8 formed one nation, under the name of Kolnit ; but 7 separated from 8 for want of room at Oak Point.
9. <i>Wakaikum.</i>	9. <i>Wakaikum.</i>	On the right bank of the Columbia ; on a small stream, called Cadet River, a good way below Oak Point, between it and Katlamak.
	10. <i>Katlamak.</i>	On the left bank of the Columbia ; on a river of same name, running from the interior.
	11. <i>Awakat.</i>	At Fort George. This is the name of a place, not of a nation ; many nations come together there for berries, &c.
12. <i>Klakhelnk.</i>	12. <i>Klakhelnk.</i>	On Clatsop Point ; commonly called Clatsops.
	13. <i>Chenook.</i>	A nation on Baker's Bay.
III. CHACHALI CHENOOK LANGUAGE.	14. <i>Chachelis.</i>	On Gray's Bay ; at the entrance of the river.
	15. <i>Qyan.</i>	On the North Point of Gray's Bay.
IV. 16. <i>Qweenylt.</i>	16. <i>Qweenylt.</i>	On a river of same name.
	17. <i>Náelim.</i>	On a river on the sea-coast, 30 miles S. of Clatsop Point.
V. KULLIMOUX LANGUAGE.	18. <i>Nikaas.</i>	On the sea-coast, 30 miles S. of No. 17.
	19. <i>Kowai.</i>	On the sea-coast, S. of No. 18.
	20. <i>Neselitch.</i>	On the sea-coast, S. of No. 19.
VI. 21. <i>Tacóón.</i>	21. <i>Tacóón.</i>	On the sea-coast, S. of No. 20.
	22. <i>Aleya.</i>	On the sea-coast, S. of No. 21.
VII. 23. <i>Sayonsila.</i>	23. <i>Sayonsila.</i>	On the coast, S. of No. 22.
	24. <i>Kiliwatsal.</i>	On the coast, S. of No. 23.

VIII. { 25. *Kaons.* On the coast, S. of No. 24.
 { 26. *Godamyon.* On the coast, S. of No. 25. (Siquitchib.)

IX. 27. *Stotonia.* On the coast, S. of No. 26, at the mouth of the River des Coquins.

SEHALATAK. { 28. *Katlawewalla.* At the Falls of Wallamat.
 { 29. *Klakimass.* On river of that name.

X. 30. *Clamet.* On the upper part of the river, and 60 miles below the lake so named.

XI. 31. *Sasty.* On a river of same name to W. of No. 30. The River Stotonia is 60 miles N. of Clamet River, at its entrance into the sea. Its source is on the N. side of the Clamet Mountain, and that of the Clamet River on the S. side of the mountain. Sasty is between the Clamet and Buenaventura River. There are two snowy peaks between the mountains Vancouver and Clamet.

32. *Isallect.* On the Umpqua River, between No. 24, which is at its mouth, and the first rapids.

33. *Umpqua.* On a river of that name, above No. 32, towards the interior.

Detached Notes on the tribes about Fort Walla-walla, in the interior, situated at the confluence of the River Walla-walla with the Columbia, a little above the point where the Columbia changes its course from W. to S.* :—

“ The Indians here are a quiet, sedate race compared with the Chenoos and Sehalataks, and have a more noble and manly aspect. They are generally powerful men, at least 6 feet high. None of the women come about the fort.”

“ I endeavoured to obtain from the interpreter some explanation of the appellations given to the different nations on the Columbia, such as Nez-percés, Flat-heads, Black-feet, &c. ; but no one knows the origin of these terms, as their own names, Silish, Shahaptenish, have no signification of the kind. The Nez-percés are divided into two classes, the Nez-percés proper, who inhabit the mountains, and the Polonches, who inhabit the plain country about the mouth of Snake River. The nations of the plain on the other side of the Rocky Mountains are celebrated for their warlike incursions on the Black-feet, Big-bellies, Ciriés, and Piegans or Blood Indians on this side. Of these Indians, the last are the most numerous. The Rayouse Indians, of whom I have now seen several, are quite a different race of men from the Walla-wallas ; they are stouter, and more athletic, being generally 6 feet high. They have a dignity in their gait, and a gravity in their demeanour, not possessed by the latter. They also consider it as a degradation to marry the Walla-walla women, although

* Dr. M. Gairdner had gone up from Vancouver to the Fort for his health.

the Walla-walla men make frequent marriages with the Rayouse women. The Rayouse do not muster more than 78 men; the Walla-wallas, including women and children, about 200."

"*May*, 1835.—Two Snake Indians arrived at the Fort. They have not the tall stature and noble air of the Rayouse. The Snake tribe, who come to the Grande Ronde for trade, muster 1000 to 1200 strong, and are not now as formerly, merely armed with bows, but have obtained, by theft and trade with the Americans, an abundant supply of arms and ammunition. Though there are about 50 Indians round the Fort, with everything open to them, and nobody in it but Pambroon, H. B. C.'s clerk, the interpreter, one or two boys and myself, all is quiet. In the evening the Indians say their prayers under one of the bastions, and have the same religious ceremonies as the Walla-wallas."

"I attended the religious services of the Walla-walla Indians. The whole tribe, who are here at present, men, women and children, to the number of about 200, were assembled in their kraal, squatted on their hams; the chief and chief men at the head arranged in a circle: these last officiated: towards this circle the rest of the assembly were turned, arranged in regular ranks, very similar to a European congregation. The service began by the chief's making a short address, in a low tone, which was repeated by a man on his left hand, in short sentences, as they were uttered by the chief. This was followed by a prayer pronounced by the chief standing, the rest kneeling. At certain intervals there was a pause, when all present gave a simultaneous groan. After the prayer there were fifteen hymns, in which the whole congregation joined: these hymns were begun by five or six of the men in the circle, who acted as leaders of the choir: during this hymn, all were kneeling, and kept moving their arms up and down, as if to aid in keeping time. The airs were simple, resembling the monotonous Indian song which I have heard them sing while paddling their canoes. Each was somewhat different from the other. All kept good time, and there were no discordant voices. The hymns were succeeded by a prayer, as at first, and then the service ended. My ignorance of the language prevented me from observing much of this service; but I was struck with the earnestness and reverence of the whole assembly. All eyes were cast down to the ground; and I did not see one turned towards us, who must have been objects of curiosity, as white chiefs and strangers. It is about five years since these things found their way among the Indians of the Upper Columbia. All were dressed in their best clothes, and they had hoisted a union-jack outside the lodge. The whole lasted about three-quarters of an hour."
